

Community Engagement to Enhance Child Survival and Early Development in Low- and Middle-Income Countries: An Evidence Review

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As part of a broader evidence summit, USAID and UNICEF convened a literature review of effective means to empower communities to achieve behavioral and social changes to accelerate reductions in under-5 mortality and optimize early child development. The authors conducted a systematic review of the effectiveness of community mobilization and participation that led to behavioral change and one or more of the following: child health, survival, and development. The level and nature of community engagement was categorized using two internationally recognized models and only studies where the methods of community participation could be categorized as collaborative or shared leadership were eligible for analysis. The authors identified

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34 documents from 18 countries that met the eligibility criteria. Studies with shared leadership typically used a comprehensive community action cycle, whereas studies characterized as collaborative showed clear emphasis on collective action but did not undergo an initial process of community dialogue. The review concluded that programs working collaboratively or achieving shared leadership with a community can lead to behavior change and cost-effective sustained transformation to improve critical health behaviors and reduce poor health outcomes in low- and middle-income countries. Overall, community engagement is an understudied component of improving child outcomes.

It is now apparent that many countries will not achieve Millennium Development Goals 4 and 5 to reduce child mortality and improve maternal health. The Child Survival Call to Action (<http://5thbday.usaid.gov/pages/responsesub/event.aspx>) provides a roadmap for ending preventable child death. The achievement of this goal requires sustainable population-level behavioral changes that can affect maternal and child health, particularly in low- and middle-income countries (LMICs) where this goal has been most difficult to attain. To address the problem of ending preventable child deaths, USAID in collaboration with UNICEF and other partners, convened an Evidence Summit on Enhancing Child Survival and Development in Lower- and Middle-Income Countries by Achieving Population-Level Behavior Change on June 3–4, 2013, in Washington, DC (Fox & Obregón, 2014). The Evidence Summit brought together leading researchers, development experts, and those implementing programs in the field to assess the evidence to inform policies, strategies, and programs relevant to behavior change for child survival and development in LMICs. Another goal was to identify evidence gaps to help determine the future research agenda.

There are a range of behaviors to be targeted (Fox & Obregón, 2014), such as healthy timing and spacing of pregnancy, use of pre- and postnatal care services, better nutritional choices, use of bed nets, and making use of preventive health care such as immunization and prenatal care. It was recognized that achieving population-level behavior change involves interventions that target individual caregivers, communities, health systems, and policies. This article addresses community-level involvement. A preoccupation with community participation related to primary health care has a venerable history, stretching back to the declaration of Alma Ata and earlier (Espino, Koops, & Manderson, 2004; Rifkin, 1996; Woelk, 1992; Zakus & Lysack, 1998). An evidence review team was organized to address the question, “What are the effective means to facilitate and empower communities to organize and advocate for interventions to achieve behavioral and social changes that are needed to accelerate reductions in under-5 mortality and optimize healthy and protective child development to age 5?” This article is a report from the evidence review team.

As a review article, the terms included reflect the words and expressions included in the source articles. *Community* is applied primarily in a geographic context but also with respect to affiliation. Typically, the term *community* described a rural village setting; although, there were examples of “communities of practice” (e.g., health workers, political leaders). In published studies in this area, the most commonly used terms are *community participation* and *community engagement* rather than *community empowerment* as such. Participatory approaches can improve dialogue and decision making, removing access barriers to care seeking, giving rise to changes in behavior and increasing participation by communities, families, and individuals. These approaches can result in increased demand for services and information seeking/sharing, and positive changes in individual behaviors and social norms and practices, including those most associated with discrimination, marginalization, exclusion, stigma, and unequal and unjust power structures.

Conceptual Framework

The evidence review team used two frameworks to both shortlist and then categorize articles for this review. We first adapted and applied the Clinical and Translational Science Awards Consortium's Community Engagement Continuum (2011)—developed by the U.S. Centers for Disease Control and Prevention—to categorize the level of community engagement in the studies reviewed. We then shortlisted those studies that fell along the continuum where the highest degree of community engagement was achieved. After shortlisting articles, we applied the Integrated Model of Communication for Social Change (IMCSC) framework developed by Kincaid and Figueroa (Figueroa, Kincaid, Rani, & Lewis, 2002) to examine the community centered processes and approaches as applied in the studies in order to assess the relevant contribution of these processes to achieve behavior and social changes leading to measurable child health outcomes.

The Community Engagement Continuum consists of a stepwise scale of engagement starting with community outreach activities and culminating in shared leadership (Figure 1). The five steps or categories of increasing community involvement, impact, trust and communication in the framework include:

1. Outreach
2. Consult
3. Involve
4. Collaborate
5. Shared Leadership

The Outreach category applies to programs that provide information and services within the community (e.g., a trained health worker provides information to individuals and families at the household level). The Consult category applies to programs that share information with the community and solicit feedback. The Involve category applies to programs where communities and service providers cooperate with each other (e.g., involvement consists only of some role in the selection of the local community health workers/village health workers and/or the involvement of community members in some intervention activities). The Collaborate category applies to programs that form a partnership with the community on several aspects



Figure 1. Community Engagement Continuum, developed by the Clinical and Translational Science Awards Consortium (2011).

of the intervention including planning and management of the program. The highest step in the community engagement continuum is Shared Leadership, where final decision-making authority for the program is held by the community itself. The goal was for all the shortlisted papers included in this review to fit within the Shared Leadership category; however, because of the lack of published evidence available, the team expanded the criteria and considered those papers that were relevant and demonstrated substantive community involvement at both the Collaborate and the Shared Leadership levels. The review is organized around these topics.

The IMCSC (synthesized by the authors here in Figure 2) proposes both community dialogue and collective action as requirements for sustainable behavior and social change outcomes. The model depicts a dynamic process that is sparked by a “catalyst/stimulus” that can be internal or external to the community. This catalyst leads to local dialogue on a development issues, involving different stakeholders and organizations in the community. If effective, this process identifies and analyzes the common elements that enable community members to develop a collective action plan leading to the resolution of the identified issue(s). Communities are engaged from the beginning of this process until the end, when outcomes are assessed at the individual and community level. The catalyst is a trigger for the dialogue and the dialogue and collective action are the triggers for behavior and social changes. (The original published version of the IMCSC is provided as Figure A2 in the supplemental online appendix.)

We applied the Community Engagement Continuum to categorize the various levels of community participation, and we applied the IMCSC to assess the approaches and processes involving the participation of communities as applied in the retained articles. To the degree possible, we have also attempted to assess the contribution of these community-centered approaches and processes to the achievement of improved behavioral health outcomes. Using the continuum to assess programs enabled us to systematically identify from the evidence those programs that achieved a strong degree of Collaboration or Shared Leadership with communities. By using the IMCSC, we were able to describe the community context and processes leading to measured changes. Use of the two frameworks provided a helpful theoretical foundation upon which to characterize community participation experiences within the child survival and development field.

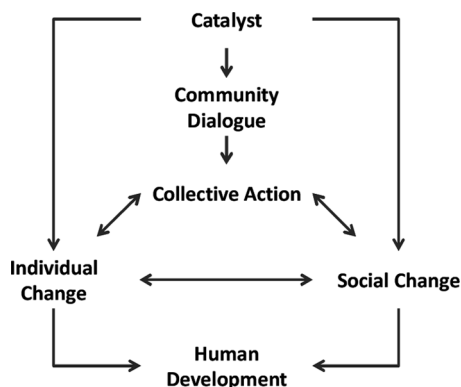


Figure 2. Adapted from the Integrated Model of Communication for Social Change, developed by and used with permission from Figueroa, Kincaid, Rani, and Lewis (2002). Copyright held by the Rockefeller Foundation.

Method

We conducted a systematic review in two phases. The first phase was carried out through the Evidence Summit, which included a generic literature search for all papers and a call for evidence as described in another article in this journal issue (Balster, Levy, & Stammer, 2014). However, this initial search did not use terms specifically targeting community-centered approaches, particularly those addressing empowerment or engagement. Thus, the evidence review team, with the assistance of the USAID Knowledge Management Services project, embarked upon a second search using the same protocol as the overall Summit search but adding 40 search terms in an effort to capture papers addressing community engagement missed in the initial search (see the supplemental online appendix for a listing of these search terms). We searched for articles in English, Spanish, or Portuguese published on or after January 1, 1990, which included an intervention and a child health, behavioral, or developmental outcome. We searched the following databases: PubMed, JSTOR, EbscoHost, SCOPUS, Science Direct, and the Cochrane Library. The complete list of exclusion criteria used for the search can be found in the supplemental online appendix accompanying the article by Balster and colleagues (2014).

A flowchart showing the origin of documents retained in our literature review is shown in Figure 3 in the supplemental online appendix. Out of the 1,064 documents identified in the Evidence Summit search, we retained 19 for our review. Of these, we identified one published article describing a promising study protocol but not presenting findings. The second expanded search yielded an additional 687 articles, of which we retained 5 that fit into either Collaborate or Shared Leadership categories of the Community Engagement Continuum. One evidence review team member contributed six other papers that we incorporated. In a final step, we examined references cited in each of the shortlisted papers to identify additional papers not previously captured through the search process, yielding 15 additional documents. A screen and shortlisting of these yielded an additional four papers. In total, we retained 34 articles for analysis. There were challenges in conducting a systematic review in this area as an agreed standard terminology for community participation and engagement is lacking. Thus, just over one third of the final shortlisted papers were not successfully captured using the original Summit search terms.

We screened each article for content and quality using criteria established by the evidence review process (Balster et al., 2014), compiling data in the following domains: child health technical area; types of behavioral change intervention; behavioral, health and/or development outcome reported; the cost of intervention; transferability and use of the approach in other contexts; scalability and sustainability; and likelihood of the study to contribute to Summit recommendations concerning practice and policy. In addition, reviewers provided their notes and comments on each screened document. For every article that met the relevance and quality criteria, evidence review team members reviewed and shortlisted those applicable to our research question based on the level of community engagement as categorized in the Community Engagement Continuum, described earlier.

Results

Level of Engagement

Of the documents reviewed, half (17 of 34 papers) did not specifically report on any change in community empowerment; nevertheless, the interventions reflected community-level activities demonstrating that trust was built with and within the community, communication flowed between the community and those stimulating

behavior change, and strong partnerships were formed. Nearly all of the articles (32 of 34) described how the intervention strengthened local capacity.

Type of Evidence

The study method in the articles reviewed varied greatly. Three quarters (27 of 34 articles) were implemented in a controlled research setting; there were seven articles reporting findings from evaluations undertaken in routine program settings. Of those implemented in a research setting, 16 were randomized controlled trials, 3 had a pre/post design, 3 were case-control studies, 2 were longitudinal observation studies, 2 articles presented a process evaluation embedded within a larger randomized controlled trial, and one article presented information from a prospective observational cohort study. Of those implemented in a programmatic setting, one was an randomized controlled trial, three had a pre/post design, one was a secondary analysis conducted from a national survey, one conducted follow up surveys to assess the sustainability of an intervention, and one was described as an “intervention study.” Several articles noted that randomized controlled trials, while considered the most rigorous way to evaluate the efficacy of an intervention, may not be the best way to document the process by which the interventions meant to foster community participation was implemented.

A subset of articles from South Asia provides a more detailed investigation of the mechanism of the community mobilization process in influencing health outcomes, through several articles that describe different aspects of the study methodology. In all, the authors identified four groups of linked articles that examined different aspects of the same research study. These linked articles included Ahmed, Zeitlin, Beiser, Super, and Gershoff (1993) and Ahmed and colleagues (1994) describing in more detail the research protocol and process in one article (Ahmed *et al.*, 1993) and the results in more detail in the other (Ahmed *et al.*, 1994). Also set in Bangladesh, the articles by Houweling and colleagues (2011); Younes, Houweling, Azad, Costello, and Fottrell (2012); and Fottrell and colleagues (2013) examined different aspects of a randomized controlled trial conducted in three rural districts. Manandhar and colleagues (2004), Osrin and colleagues (2003) and Morrison and colleagues (2010) presented a similar set of papers describing findings on the Participatory Learning and Action Cycle activities in Makwanpur district, Nepal. Likewise, findings from the Ekjut project in India are described by Tripathy and colleagues (2010) and Rath and colleagues (2010). The protocols and experiences of this project subsequently were used to inform a later expansion of the intervention within the same districts (Roy *et al.*, 2013), and a later adaptation (Tripathy *et al.*, 2011). The results presented by both Rath and colleagues (2010) and Morrison and colleagues (2010)—which were both process evaluations embedded within a randomized controlled trial—provide good examples of how rigorous experimental research can be carried out while gleaning the richness of operational detail.

Theory and Approaches

In designing intervention programs that engaged the community, the studies drew on a wide range of theoretical models (see Table 1). Models that are based on participatory group processes were the most prevalent (14 studies). Of note is that all studies used some kind of formative research. Most used group discussions and/or action. Several studies defined their approach based on the type of formative research applied. Categorization of the study into the Collaborate or the Shared Leadership level was done partly on the basis of the degree of community involvement in the applied formative research approach, which varied across studies. The methods used for formative

Table 1. Cited participatory group process, community development/participatory formative research, or other program model applied by the studies reviewed

| Process/model | Study |
|---|---|
| Community development models | Arrizon et al. (2011) Saha et al. (2013) |
| Community-based participatory research models | Ahmed et al. (1993) Ahmed et al. (1994) Marsh et al. (1996) Persson et al. (2012) Rickard et al. (2011) |
| Diffusion of innovations | Nayak et al. (2001) |
| Health belief model | Schwebel et al. (2009) |
| Health promotion | Houeto and Deccache (2007) |
| Most significant change technique | Underwood et al. (2012) |
| Participatory learning and action | Fottrell et al. (2013) Houweling et al. (2011) Lynch et al. (1994) Manandhar et al. (2004) Morrison et al. (2010) Nonaka et al. (2008) O'Rourke et al. (1998) Osrin et al. (2003) Rath et al. (2010) Roy et al. (2013) Tripathy et al. (2010) Tripathy et al. (2011) |
| Participatory rural appraisal | Lewycka et al. (2013) |
| Positive deviance and ethnographic techniques | Ahmed et al. (1993) Ahmed et al. (1994) Mackintosh et al. (2004) |
| Social-actor community Integrated Management of Childhood Illness | Harkins et al. (2008) |
| Socializing Evidence Participation Action | Omer et al. (2008) |
| Stages of change | Thevos et al. (2000) |
| Trials of improved practices | Kumar et al. (2008) Kumar et al. (2012) |

research ranged from secondary analysis of quantitative data (Saha, Annear, & Pathak, 2013) to Trials of Improved Practices that involves potential program beneficiaries in shaping final project content (Kumar et al., 2012; Kumar et al., 2008) to a social mobilization approach for each community seen in the Social Actor method (Harkins et al., 2008) and the Participatory Learning and Action method (Table 1). In most cases, studies included in the shared leadership level were defined by the extent to which the formative research and priority setting were done by the community instead of by the researchers operating in the community. Also, distinguishing the two levels was the extent to which community consultation or learning continued throughout the study as part of the community process (more likely in the shared leadership level) rather than being used exclusively at the outset to design study activities.

As stated, the model most commonly used was some variation of Participatory Learning and Action, with 14 articles referencing this type of model. Twelve articles referenced Participatory Learning and Action specifically, one referenced the Most Significant Change Technique (Underwood et al., 2012), and one article applied a Socializing Evidence Participation Action process (Omer, Mhatre, Ansari, Laucirica, & Andersson, 2008). Of the 14 studies using a Participatory Learning and Action

cycle, three were classified in the Collaborate level and 12 in the Shared Leadership level. Other studies applied a range of models falling under a generic heading of community development and community-based participatory formative research that often involved a group process with intense initial community involvement. Three articles applied the Positive Deviance with anthropological methods, and as mentioned earlier, two studies used Trials of Improved Practices. Two of the studies drew upon models from the community development field in their intervention design (Arrizón, Andersson, & Ledogar, 2011; Saha *et al.*, 2013). One study used the Social Actor Community Integrated Management of Childhood Illness approach. Other studies applied methods appropriate for individual behavior change to both group and individual processes: the health belief model was applied in one study, and one article referenced a health promotion approach with the following components: participation, empowerment, contextualism, intersectorality, multi-strategy, equity, and sustainability. Last, one study referenced diffusion of innovation theory which seeks to explain how, why, and at what rate new ideas and technology spread through communities and populations.

Stakeholder Engagement

The majority of interventions described in the studies retained linkages with the existing health system to some degree. Of the articles, 25 reported on designs implemented through the existing health system; 9 did not report on any activities that would indicate they coordinated efforts with public service providers. Although there is growing attention to the importance of working across sectors, only seven of the studies integrated health activities with those of other sectors. There was even less involvement with private sector stakeholders. While there were limited references to private or multisector partners, the majority of the articles did reference strong linkages with nongovernmental organizations. Twenty-one articles indicated that nongovernmental organization stakeholders were involved in the design, implementation and/or evaluation of the studies. Of these, 10 noted that the implementers worked with community-based organizations, and 4 referenced a faith-based organizational partner. Three articles, each of which applied a community-based participatory research model in their design, referenced the researchers as intervention community partners.

Child and Newborn Health Areas

We identified articles evaluating the effectiveness of a range of community engagement processes spanning seven of the Evidence Summit's eight high-impact intervention focus areas. The greatest number of articles we reviewed concentrated on improving newborn health (20 of 34 articles). We reviewed 10 articles on nutrition, many of these targeting immediate and exclusive breastfeeding behaviors. Seven articles focused on acute respiratory infections/pneumonia or diarrheal disease, and seven articles on malaria. An additional three articles included an immunization component, and four included promotional interventions for healthy timing and spacing of pregnancy. We identified only one study with a strong level of community engagement that addressed the prevention of mother-to-child transmission of HIV or child development. Additional child health interventions addressed in the studies include deworming, trachoma and injury prevention (one study each).

Integration

Several studies evaluated intervention packages that were integrated across child health areas, with newborn health and nutrition co-occurring most frequently (6 of

34 articles). Harkins and colleagues (2008) evaluated an integrated primary health care program covering the majority of the high-impact intervention areas. Five articles addressed three integrated technical intervention areas and five articles addressed two of the technical intervention areas. Surprisingly, given the global level emphasis on integrated acute respiratory infections/pneumonia, diarrhea and malaria care, promoted through community case management programs in many of the study countries, only Harkins and colleagues' (2008) study evaluated an intervention package that integrated these three program components.

Target Age Group

Approximately two thirds of the studies (22 of 34 articles) specified a target age group of the children whose health they hoped to impact. Of these, nearly all of the studies included the newborn (<1 month of age) in their target group, and half of these included children beyond the newborn period in their target age range (10 of 23 articles). One focused on infants (<1 year of age), two articles focused on children 18 months or younger, and two articles focused on children younger than 3 years of age. Five articles focused on children younger than 5 years of age. There was a set of studies (4 of 34 articles) that indicated a target group of preschool children, children in a particular level of the school system (e.g., Grades 3–5), or just children in general, but few of these articles defined the age range of the target group or those impacted by the intervention. More than half of the studies noted a target group of pregnant women (17 of 34 articles) or women of reproductive age (4 of 34 articles) with a health intervention package that included a child health component. Furthermore, a number of studies specified target groups including families (1 of 34 articles), households (1 of 34 articles), or women's groups (2 of 34 studies), which also included intervention components that addressed behaviors for improved child health. One article described an intervention targeting policy makers and influential people.

Social and Behavior Change Interventions

We looked at how the studies included in our review applied the following categories of communication and other approaches to promote social and behavioral change: media (mass, social, interpersonal communication, and folk), community mobilization, educational programs, opinion leadership, economic incentives, and policy/legislative changes. This is not surprising given our research question focusing on community engagement; community mobilization was the most commonly applied intervention type among the studies we reviewed. Twenty-nine of the 34 articles reviewed described community mobilization as part of the intervention design. Education programs and opinion leadership were also commonly applied as part of the intervention package. Twenty-two articles described education as part of the package, and 16 addressed opinion leaders. Seven articles described incentives as part of the intervention package, four included social marketing, and six included a media component. Six of the studies reviewed included a policy component.

Outcome Indicators

The studies we reviewed were classified in terms of their outcome measures. Twenty articles monitored health outcome indicators to evaluate effectiveness, and nine used knowledge, attitude and/or practice indicators to evaluate effectiveness. Three studies measured intervention coverage as a proxy for effectiveness, and two presented qualitative data to identify the factors that influenced intervention success and impact.

Impact on Mortality

Several of the studies reviewed were controlled and powered to measure changes in mortality of target populations as a primary outcome, in particular neonatal mortality. Thirteen articles presented downward changes in mortality as a measure of effectiveness. Of these, eleven measured neonatal mortality, two of which (Bang *et al.*, 2005; Fottrell *et al.*, 2013) were powered to disaggregate outcome by early and late neonatal mortality. Four studies tracked the stillbirth rate, and six studies measured perinatal mortality. Six measured the maternal mortality ratio, one of which focused on pregnancy-related maternal mortality; of these, three were powered to assess a change in maternal mortality. Two studies measured infant mortality, and Houeto and Deccache (2007) measured under-5 mortality.

Coverage of target groups and intervention intensity were both identified as important determinants in achieving impact in terms of behavior change and reducing mortality. The study approaches were implemented in regions with high baseline mortality rates. In addition, community factors including strong social capital and trust in those delivering the intervention, social cohesion and high levels of community participation in the intervention, and a stable environment in which information could be easily exchanged were each likely to facilitate collective action and diffusion of messages in the target populations. Few of the studies were powered to disaggregate the effects of individual behaviors on mortality; Lewycka (2013) noted that reductions in morbidity and mortality rates were likely the result of small changes in many behaviors.

Collaboration Studies

The National Institute of Health in the Principles of Community Engagement (Clinical and Translational Science Awards Consortium, 2011) notes that collaboration with the community may evolve in myriad of ways and define the level “collaborate” to include community involvement, a bidirectional flow of communication between the community and those advocating the intervention, and a form of partnership with the community on each aspect of the intervention from development to solution. In addition, entities or institutions within the community and those introducing the intervention, presumably actors external to the community, establish bidirectional communication. As an outcome of these relationships and channels of communication, both trust and partnership bonds are built or strengthened. Of the articles we reviewed, we found that 12 described an intervention program that fit this definition of collaborate (see Table 1 in the supplemental online appendix). Two of these articles were reporting on a single study (Kumar *et al.*, 2012; Kumar *et al.*, 2008).

Catalyst

The IMCSC model describes a sequential process of engagement that begins at Catalyst, moves to Dialogue, and transitions to Collective Analysis and Action in order to achieve specified Individual and Social Change Outcomes and Societal Impact (Figueroa *et al.*, 2002). The Catalyst in the majority of the Collaborate studies we reviewed (5 of 11 studies) was the researchers themselves. However, in several cases an innovation, technology, or policy was the catalyst or a component of the catalyst. Four studies tested the application of an innovation as a catalyst for behavior change. Kumar and colleagues (2012) and Kumar and colleagues (2008) used Thermospot, a liquid crystal hypothermia indicator; Nayak, Vazir, Vijayaraghaven, and Chandralekha (2001) used locally available foods rich in vitamin A; and Thevos, Kaona, Siajunza, and Quick (2000) applied a Safe Water System. To some extent, the Home-Based Newborn Care package introduced in the Bang and colleagues (2005) study may also

be seen as an innovation intended to catalyze behavior change. There were three studies focused on prevention of malaria that involved bednet technologies associated with behavior change (Marsh, Mutemi, Some, Haaland, & Snow, 1996; Nonaka et al., 2008; Stromberg, Fredericksen, Hruschka, Tomedi, & Mwanthi, 2011). Nayak and colleagues (2001) focused attention on the national nutrition policy of India when launching their study. Furthermore, four articles described an intervention for which the change agent was a local entity. These included Bang and colleagues (2005), where an established local nongovernmental organization had conducted previous research in the community and was used to link to the community; Omer and colleagues (2008), where lady health workers catalyzed the intervention; Schwebel, Swart, Simpson, Hobe, and Hui (2009), where a regional nongovernmental organization led the process of engagement with the community; and Saha and colleagues (2013), where the change agents were community-based self-help groups operating in communities at national scale.

Community Dialogue

The process of community dialogue used by these studies varied greatly. Those applying a high degree of community dialogue include Kumar and colleagues (2012), Kumar and colleagues (2008) and Schwebel and colleagues (2009). In each of these studies, at least four of the participatory process steps outlined by Figueroa and colleagues (2002)—recognition of a problem, identification and involvement of leaders and stakeholders, clarification of perceptions, and an action plan—were carried out with the intervention community. In Kumar and colleagues (2012) and Kumar and colleagues (2008), this went further to include discussions with the community on options for action and clear consensus on a plan. In the majority of the other studies, the only community dialogue steps described included the identification of leaders and stakeholders and recognition of a problem; there was not often a description of how or if clear consensus was achieved.

Collective Action

We see a stronger degree of community participation among the Collaborate studies in the stage of Collective Action. This is most evident again in the Kumar and colleagues (Kumar et al., 2012; Kumar et al., 2008) articles and in the Schwebel and colleagues (2009) study. In both cases, the implementers mobilized and trained a network of local volunteers among whom there was a clear delineation—or assignment—of roles and responsibilities. This was best described in Kumar and colleagues (2012) and Kumar and colleagues (2008), which implemented across a larger coverage area and was specifically looking at how efficacious the intervention was when implemented at a larger scale than in predecessor studies. We found volunteer mobilization approaches similar to this in the other studies. In Bang and colleagues (2005), intensive mobilization efforts led to substantial coverage achievements of the intervention. Nayak and colleagues (2001) mobilized health workers, a local nongovernmental organization and schoolchildren to implement a range of community education and mass media interventions. Three malaria studies (Marsh et al., 1996; Nonaka et al., 2008; Stromberg et al., 2011); and the one water, sanitation, and hygiene study (Thevos et al., 2000) each relied heavily on local volunteers.

There was a strong local capacity building or training component to each of the mobilization strategies, many of which included a defined training component. The training programs ranged in duration from 2 days to 2 weeks; there were six studies where the training duration was either not described (Bang et al., 2005; Nayak et al., 2001; Schwebel et al., 2009; Thevos et al., 2000, Underwood et al., 2012) or not relevant (Saha et al., 2013). One study used a cascade train-the-trainer approach for the specified reasons of cost containment and rapid scale up (Schwebel et al.,

2009). The trainees themselves ranged from community volunteers (Bang *et al.*, 2005; Marsh *et al.*, 1996; Schwebel *et al.*, 2009; Stromberg *et al.*, 2011; Thevos *et al.*, 2000), to paid extension or health workers (Kumar *et al.*, 2012; Kumar *et al.*, 2008; Marsh *et al.*, 1996; Nayak *et al.*, 2001) to teachers and schoolchildren (Nayak *et al.*, 2001; Nonaka *et al.*, 2008), to local nongovernmental organization and community-based organization leaders (Nayak *et al.*, 2001). Only the Underwood and colleagues (2012) study appeared to rely solely on paid project staff to deliver the intervention. Additional capacity building modalities included supportive supervision: supplemental coaching was provided by a regional supervisor before beginning work and for the duration of implementation in the Kumar and colleagues (2012) and Kumar and colleagues (2008) studies, and both Bang and colleagues (2005) and Thevos and colleagues (2000) integrated intensive field supervision as part of the intervention design.

Implementation strategies used by the studies varied, with a heavy emphasis on community mobilization, health education, or a combination of both. The Kumar and colleagues (2012) and Kumar and colleagues (2008) studies put a system of community mobilization efforts in place combined with household level visits, and used a monitoring system and pay-for-performance incentives to maintain this system. Village health workers delivered health education and services at the household level in the Bang and colleagues (2005) study. Nayak and colleagues (2001) used a combination of community mobilization, local mass media channels, and positive deviance approaches to promote increased vitamin A intake and incorporated health education components into group discussions. Nonaka and colleagues (2008) implemented a health education program extending outward from schools into the community, and organized a 1-day antimalaria campaign. Marsh and colleagues (1996) used a combination of health education delivered at community mobilization sessions and at the household level to reduce malaria transmission, in addition to a school-based program that integrated a media component developed by the schoolchildren. Stromberg and colleagues (2011) made use of the local health system to distribute bednets, and then implemented a community mobilization strategy through which to deliver malaria health education. Thevos and colleagues (2000) distributed a Safe Water System technology and then followed up to provide health education at the household level. Underwood and colleagues (2012) implemented a community mobilization strategy to deliver an integrated health promotion package. Schwebel and colleagues (2009) implemented a health education program, delivered at the household level, to reduce kerosene related injuries. Last, Saha and colleagues (2013) evaluated health outcomes in communities implementing a particular community mobilization strategy (Social Health Groups).

Individual and Social Change Factors

The articles we reviewed provide insights into the individual and social change factors that facilitated these outcomes. Increased social cohesion was documented in three studies. Kumar and colleagues (2012) and Kumar and colleagues (2008) found that social capital was built, trust increased among community health workers, and their legitimacy was established through reinforcement by other intervention stakeholders. Saha and colleagues (2013) also found that social capital and trust was facilitated and noted that a sense of belongingness contributed to its outcomes. We expected to find a high degree of collective action and local capacity building integrated into each of the Collaborate level studies, and indeed increased collective capacity was noted in two articles. The Kumar *et al.* articles documented that community members actively participated throughout the research cycle and that social networks leveraged by the intervention had an influence on its outcomes. Increased collective self-efficacy was also documented in four of the studies. Kumar and colleagues (2012) and Kumar and colleagues (2008) found that the community became more empowered as a result

of the intervention and collective action influenced behavior. Bang and colleagues (2005) noted how village health workers were empowered through a pay-for-performance system and through community recognition, which instilled what the authors described as “emotional gratification.” Underwood and colleagues (2012) found that rural residence was associated with greater community capacity, which mediated the effect of the intervention package on community action and of community action on behavior. An increased sense of ownership was noted in three of the articles, each of which focused on newborn health. Kumar et al. documented how, even though the research was designed to focus on hypothermia, it was later broadened as the community took greater proprietorship of the design to include a complete essential newborn care package. Bang and colleagues (2005) documented how neonatal care was increasingly prioritized among both adult males and females as the community consultation process rolled out. Social norm change was registered by eight of the articles. Kumar and colleagues (2012) and Kumar and colleagues (2008) and Bang and colleagues (2005) noted increased male support and gender equity as a result of the intervention, in addition to changes in values and traditions around the time of childbirth. This included overcoming a fatalistic view of newborn health (Bang et al., 2005). Several documents registered that a range of beliefs, attitudes, and perceptions specific to the health area changed during the intervention period (Marsh et al., 1996; Nayak et al., 2001; Nonaka et al., 2008; Thevos et al., 2000; Underwood et al., 2012).

Shared Leadership Studies

The Shared Leadership category represents the end of the spectrum with the greatest community engagement within a program. A Shared Leadership categorization is determined by a strong bidirectional relationship between the program and the community, and may include approaches initiated by the community itself. This relationship extends beyond communication to joint planning, implementation and ultimately approval on intervention elements. The Shared Leadership community intervention relationship includes the presence of strong partnership systems and structures between entities. Figueroa et al., 2002 further elaborate on some of the elements that indicate the presence of a Shared Leadership relationship. These elements include expressions of shared ownership; the degree and equity of participation, including information equity; equitable access to resources; a sense of collective efficacy among community participants; engagement through social capital (community structures and systems that support the intervention); and value for continuous improvement. The presence of these attributes leads to a shift in locus of authority to the community. In a shared leadership scenario, final decision-making authority rests with the community rather than with the program managers. As an outcome of this relationship, understanding of the intervention objectives and outcomes and the potential for longer term sustainability of interventions are presumed to be strengthened. The result of a true shared leadership scenario can be a process of social change and long-term transformation. Of the articles reviewed, we found that 22 fit this definition of Shared Leadership, capturing data from 19 distinct research studies (see Table 2 in the supplemental online appendix; some studies were covered in multiple articles).

Catalyst

Similar to the findings among Collaborate style relationships, in the overwhelming majority studies involving shared leadership the initial catalyst for action was the research team. In one instance, however, a community-based organization requested the support of the intervention team to assist the community to address malaria morbidity and persistent low usage of insecticide treated nets following distribution

(Rickard et al., 2011). Community members planned, identified community-based actions and implemented their chosen interventions under key child health topic areas by working through community action groups. Two studies examined the influence of participatory community action models with policy makers on health development (Arrizón et al., 2011; Persson et al., 2013), both finding positive impacts.

Community Dialogue

The process of Community Dialogue documented in these studies was consistent, although sometimes described in different terms. All 22 articles (discussing evidence from 19 studies) described an intervention that used an adaptation of a phased community action cycle as described by Figueroa and colleagues (2002), often referred to as Participatory Learning and Action, wherein participants: identify and prioritize health problems together; plan solutions together; act to implement these solutions together; and evaluate the outcomes together. The community dialogue typically took place in a community group setting. Among the community groups described in these papers, 8 of 19 studies worked with women's groups and 3 focused on general community groups. Other models for community-based action included peer counseling ($n = 2$); engaging health providers to identify quality improvement processes ($n = 4$); and strengthening policy planning and leadership ($n = 2$).

Collective Action

Going beyond the Collaborate scenarios, the participants in the shared leadership environments were expected to implement actions to improve health in their communities. These included group actions such as establishing revolving savings funds, talking at community meetings, developing local educational materials, assembling locally produced safe delivery kits, and community radio programs. Participants also encouraged each other to take actions at home with their families.

Shared leadership approaches also included a strong local capacity building or training component to each of the mobilization strategies, many of which included a defined training component. Only 3 of 19 described the length of training (from 5 to 11 days), but where the training program was described it often emphasized participatory facilitation techniques. Trainers included project staff, government training staff, and skilled community members training others in a cascade style. The trainees were typically community volunteers. A study from Vietnam (Persson et al., 2013) recruited nonhealth professionals from the Women's Union to facilitate participatory groups composed of local political leaders and health staff to identify strategies to reduce the neonatal mortality rate.

Individual and Social Change Factors

Shared leadership approaches demonstrate a good fit to the social change model described by Figueroa and colleagues (2002). In keeping with this model, the factors that appear to have contributed to positive outcomes are likewise similar to the individual and social change factors described by Figueroa and colleagues (2002). On the individual level, increased knowledge, improved confidence, improved self-efficacy, and stronger decision-making skills are cited as contributing to positive results. On the social level, authors cite increased leadership, stronger social cohesion, community ownership, evolving social norms and improved collective efficacy as factors contributing to improved health outcomes. It is impossible to say with certainty the extent to which these factors influence the outcomes and the extent or mechanisms by which they work, because none of the studies measured these constructs.

Two study teams conducted qualitative process evaluations to better understand the potential mechanisms through which participation in women's groups lead to

improved community-level outcomes. Morrison and colleagues (2010) conducted a qualitative study in Nepal, which used photo-elicitation techniques to describe and elaborate on the results reported in another article included in the review by Manandhar and colleagues (2004). Similarly, Rath and colleagues (2010) examined the mechanisms underlying the effect of the India Ekjut project (Tripathy et al., 2010). Morrison and colleagues (2010) propose four mechanisms to account for the impact of the women's group approach. Women who participated in the group had improved learning about health; increased confidence; disseminated information to the larger community; and built community capacity to take action. Morrison and colleagues (2010) also noted that the intensity and coverage level of the women's groups in the study districts contributed to their success. In India, Rath and colleagues (2010) identified six factors contributing to the impact of the Ekjut project: the acceptability of the process to the cultural context; strengthened knowledge, skills, and critical consciousness of participants; community involvement beyond the groups; inclusion of marginalized groups; active recruitment of new members to the groups; and high coverage among the population.

Generalizability and Cost

Transfer/Replicability

The majority of the articles we reviewed included designs that were, at least to some degree, community-driven and tailored specifically to the local context in which they were implemented. Nevertheless, 20 used designs that could potentially be replicated in other settings and many more used intervention processes and approaches that could be adapted for use in other contexts. The Warmi project in Bolivia reported by O'Rourke, Howard-Graham, and Seoane (1998) was cited as a seminal inspiration by later authors, although a number of these studies did not show similar impact. Likewise, authors reporting on community empowerment through community women's groups cited inspiration and adapted methods from other similar approaches. Specifically the teams working in Bangladesh (Fottrell et al., 2013), India (Tripathy et al., 2010), Malawi (Colbourn et al., 2013; Lewycka et al., 2013), and Nepal (Manandhar et al., 2004; Morrison 2010; Osrin et al., 2003) cited a similar approach and adaptation of a four-phase, 20-meeting cycle. One study from India (Roy et al., 2013) investigated the replicability of the Ekjut project women's group approach and found similar effects in new communities. In fact, we found when reviewing the articles that all except one used processes that are already in use in other settings, and many of the articles cited examples of where the approaches had been previously applied.

Scale and Sustainability

A number of the studies looked closely at the scalability of the interventions that were tested, and 21 of the articles discussed the extent to which this would be feasible and one found the intervention would not be scalable. Of the 34 articles, 12 did not address scalability. One study (Roy et al., 2013) reported on the successful process and impact of scaling a women's group process to a wider catchment. All authors noted that community mobilization processes do require human and financial resources to be successfully deployed at scale, although the literature currently does not adequately address what is required for successful implementation at scale. Sustainability was not commonly addressed in studies we reviewed. One exception is Mackintosh and colleagues (2002), which reported on the sustained effects and persistence of some program elements of a community nutrition intervention in Vietnam two years after the project period had ended and found that growth-promoting

behaviors in the target population persisted years after program completion, contributing to better growth of younger siblings never exposed to the program.

Cost

We also determined whether the authors included information on cost. We found that nearly half (18 of 34) of the articles provided some cost data, and 10 indicated that complete cost analyses and/or cost effectiveness studies had been carried out as part of the evaluation. Different investigators used different assumptions in their analysis and different standards in their reporting of costing data. The costs of achieving the mortality reductions reported by the women's groups ranged from a low of US\$22 per year of life saved to high of US\$393. Other groups looked at the cost per newborn life saved (US\$1,308 to US\$3,442). These costs increased slightly when parallel investments in health service delivery were also considered.

Discussion

This review of community mobilization for improved child health outcomes demonstrates that there is still much to learn about the benefits and limitations of community mobilization approaches for health improvement. In this context, the authors use the term *community mobilization* to describe highly engaged, community-centered processes designed and implemented with the intent of improving a health outcome through a process of increased community capacity. The evidence review team retained just over one percent of the peer reviewed articles using key words indicative of community-based programming investigating improved child health outcomes. This small return is indicative of the wide variety of the types of programs that are considered community-based, the small number demonstrating behavioral impact (as opposed to changes in knowledge or attitudes), and the small number that are striving to achieve collaboration or shared leadership with the community. When describing community-based approaches, there is little consistency to inform evidence-based best practices or inform decision making about best practices. We did note a trend among those using approaches characterized as Shared Leadership to adopt a variant of a four-stage community action cycle or quality improvement process to facilitate engagement at the community level. However, the literature is not strongly grounded in theory nor do many articles hypothesize on how the community mobilization process contributes to a pathway to change beyond indications of strengthened social cohesion, confidence building and increased social capital.

One challenge encountered was the small number of articles that described process evaluation, which is critical to addressing the means of community mobilization. In cases where we did find process evaluation and a substantial level of community engagement, the articles did not specify whether it was the researchers' intention to contribute to community empowerment or capacity. Overall, this seems to be an understudied component of child health programming, and an area for further exploration. In the papers where we were able to identify substantial community participation, only a small subset included details of the supervision or facilitation component to the community led interventions, and there was virtually no discussion of how the community participated in the evaluation of their activities. This was found even in cases where the research process was designed to include the community from the design phase. Incorporating process evaluation into child health and development research is needed, and community engagement in the self-evaluation should not be overlooked (Rosato et al., 2008). Funders should require the collection of information on the continuum of community approaches in their

requests for proposals and journal editors should be encouraged to promote the inclusion of more information on the community participatory approaches either within manuscripts or as online appendices.

While much remains unknown, some patterns and guiding processes are emerging as participatory community-based interventions are being better studied and documented. The literature review confirms that interventions designed to maximize community collaboration and participation can have a beneficial impact on child health across a range of areas from reduced neonatal mortality rates to improved nutritional status. When community level activities are facilitated with sufficient intensity, communities engage to improve their health status and, albeit limited, evidence hints that the effects are potentially sustainable in some circumstances. There is some evidence that community mobilization efforts can be cost-effective when thoughtfully planned and supported; although, cost-effectiveness is highly influenced by location and other local factors. Highly engaged community mobilization approaches also show impact on a range of social groups not bounded by sex of participants, socioeconomic status, or location of community. In short, the literature describes replicable approaches that can be adapted with effectiveness in a variety of settings for the benefit of many social groups.

The range of interventions reviewed and the varying style and intensity of outcomes that they comprise speaks to the complexity and the heterogeneity of the field of community mobilization. This variety complicates evaluation of the methodology, because there are so many indicators and mechanisms of action to consider. On the other hand, evidence of positive health outcomes on some child health indicators (for example, neonatal mortality) supports the potential effectiveness of a community action cycle approach to improved health outcomes that can be mitigated by factors that a community is able to directly influence (for example home hygiene, household nutrition, or number and timing of antenatal care visits). The heterogeneity of approaches that communities adopted through the mobilization approach affirms the local ownership inherent in the process.

Community mobilization interventions are by intent highly localized. Thus the character of the intervention will necessarily vary. The diversity of responses highlight that there is no one right approach or outcome of engagement, but rather it is the norms, cohesion, and collective efficacy that communities foster around new knowledge that is critical for the behavioral transformations. The consistency of these factors emerging in the discussion sections of the studies that we reviewed indicates that the IMCSC is a good fit to describe the underlying transformative process that achieves community-based behavior change. (We were surprised that, although the IMCSC was created more than a decade ago and has been applied by global development organizations, it was not mentioned in any of the articles we reviewed.) The fit of this model indicates that it merits further study in a prospective manner to investigate whether community engagement approaches can purposefully influence change in empowering factors and to learn more about the interplay and mechanisms of action of these intra-community influences, especially the interaction between dialogue and collective action. We would recommend further inquiry in this area, applying an iterative community engagement process as part of rigorous child health and development implementation research. For example, the studies with a Collaborate level of community engagement showed a clear emphasis on collective action, but as a whole did not focus on an initial process of community dialogue. It would be useful to explore the degree to which dialogue contributes to behavior change, or if it is sufficient to mobilize a community for collective action and achieve the desired behavior change.

A corollary to the hyper-local nature of community mobilization is the observation that community engagement approaches are primarily effective on behaviors over which the community has a direct control. In the 12–24 month period of most

studies, women's groups were able to effect changes in behaviors among other women in their homes, but not on the behaviors or practices of providers in a health facility. Likewise, health workers can influence facility-based quality and leaders can make changes through their decisions. There was no evidence in any of the articles reviewed of this influence jumping the boundaries of the community in question to another sector. For example, reductions in neonatal mortality due to actions of women's groups were not attributed to changes in facility-based practices, but rather to changes that families made at the household level. More research is recommended to learn whether over time sustained community involvement would shift to a larger social change approach and the mechanisms for this transformation.

It is clear from the review that there is a limited amount of evidence on community participation in child health and development. We recommend supporting additional research in this area and further expanding the community of practice. In particular, supporting researchers in countries where the challenges for child survival and development are greatest, in particular Sub-Saharan Africa.

Conclusions

There is evidence that programs working collaboratively or those that achieve shared leadership with the community can improve critical health behaviors, increase knowledge, improve practices, affect social norms, lower disease incidence, and reduce poor health outcomes and mortality, even in low resource settings where social conditions and practices could otherwise result in poor child health.

The purpose of this review was to assess the role of community participation in contributing to improved population-level infant and child health outcomes, mediated through improved household practices or better care-seeking behavior. Two conceptual frameworks have been used in two phases of the review. The Community Engagement Continuum (Clinical and Translational Science Awards Consortium, 2011) was used to first identify studies with higher levels of engagement through collaboration and shared leadership. The second, the IMCSC (Figueroa *et al.*, 2002), was used to examine the community centered processes and approaches to assess how these processes achieved changes leading to improved child health outcomes. The use of both of these frameworks yielded important conclusions.

Overall, the review uncovered a range of theories and approaches used to promote social change, but only a small proportion incorporated collaboration or shared leadership with the community, and then tested those with sufficient rigor to investigate causal linkages between interventions and behavioral or health impact. Community mobilization interventions will vary just as the characteristics of communities vary. Best practices suggest that the norms, level of cohesion and self-efficacy that communities foster around new knowledge is most important for the behavioral transformations. This implies that a community action cycle approach, which incorporates learning, action and dialogue within the community, can positively impact health outcomes. Further study would be valuable around these community activities to better understand the underlying processes. In addition, it is worth describing training content specific to a community engagement process or issue.

An important conclusion from the review is the need to strengthen both the design and the analytic approaches in future studies to better demonstrate any impact on outcomes including mortality and child development, as well as the underlying processes giving rise to change. An important gap identified was the lack of process evaluation as part of child health and development research, including community engagement in self-evaluation. Without community participation in evaluating process evaluation, central aspects of the nature of the engagement may be missed or misinterpreted. We also note the need for better measurement and indicators that

describe the change processes at the community level. Furthermore, additional evidence is needed on the types of community engagement that result in improved child outcomes, and what elements of these approaches and interventions work best. Evaluation of the sustainability of outcomes reached through community participatory approaches should include longer term follow-up specifically designed to measure sustainability.

Community mobilization interventions designed to maximize community leadership, collaboration and participation can have a beneficial impact on child health indicators across a range of areas from reduced neonatal mortality rates to improved nutritional status. More research is recommended to see whether sustained community participation would affect wider social change across community boundaries, and possible mechanisms for this change.

The interventions considered in this review were generally implemented by non-governmental organizations and at relatively small scale. The evidence summarized here casts little light on the extent to which these principles and methods could be used successfully at large scale in the public sector. That being the case, it would be premature to recommend efforts to apply these methods at scale. Future work, testing application of analogous approaches at larger scale will be important.

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Supplemental Material

Supplemental data for this article (Appendix) can be accessed at <http://dx.doi.org/10.1080/10810730.2014.941519>.

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